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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,868	01/16/2004	Tae-Jin Kang	KPP-0001	8003

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EXAMINER

TSAI, TSUNG YIN

ART UNIT	PAPER NUMBER
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2609

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/758,868

Applicant(s)

KANG, TAE-JIN

Examiner

Tsung-Yin Tsai

Art Unit

2609

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/16/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 1/16/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/16/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

(1) Page 9, lines 4-5, where says "Therefore, the binary image is acquired from the 3D data by representing fabrics as white and pillings as white." In this case, if the color white is use for both the fabric as well as the pillings there will be no way to tell the different because there will be no contrast to compare.

Please correct this so that color will be different

(2) Page 9, line 25, where says "a couple of CCD cameras (4) lying".

Figure 4 only shows that CCDs are label as element 40.

(3) Page 11, line 20, where says "height values.." Please correct the following to "height values."

(4) Page 12, line 12, where says "result of S12 sample". There is no such other samples state throughout the specification or drawings.

(5) Page 12, line 12, where says "pillings as shown in Fig. 9a and 9b." There are no drawings presented as "Fig. 9a" and/or "9b".

(6) Page 8, lines 1-5, regarding the given equation and its given values. The specification disclose values, such as Area(A) and r, that are not related together or plug in the equation at all. Please clarify how those values are correlated to each other as well as their functions.

(7) Page 8, paragraph one, recite using standard photographs for comparing. The paragraph is confusing on what is being compare together.

Examiner suggests rephrasing the specification so that it will be clearer on what is being compare. Re-write the first paragraph to "The measurement of pilings is done from the measurement of number, area and density of pilings. Those values, which are also obtain from standard paragraphs and which will be compare with, are used for both statistical analysis and image analysis to specify the characteristics of the fabric specimen." In this way it will be clarify that you are comparing the values from the standard photograph to those values that are generated from the equation or the computer analysis. If that is the purpose of the statement please correct. If not please clarify what is being stated.

Claim Objections

2. Claims 1-5 are objected to because of the following informalities:

(1) Claim 1, where "a step to reconstruct **the** 3D image of the fabric surface" change to "a step to reconstruct **a** 3D image of the fabric surface".

(2) Claim 1, where "a step to calculate **the** horizontal position of each region" change to "a step to calculate **a** horizontal position of each region".

(3) Claim 1, where "a step to correlate **the** pixel shift value" change to "a step to correlate **a** pixel shift value".

(4) Claim 1, where "specimen using a couple of **CCD** camera" changes to "specimen using a couple of **charge-couple devices (CCD)** camera".

Claim Rejections – 35 USC 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(1) Claim 1, lines 10-12, recite the limitation “a step to convert the 3D image into a binary image by height-threshold algorithm and number, area and density values of the pillings acquired from the standard photographs”. It is unclear how and what is being compare. Values, like area and density, are not stated clearly where they actually obtain and compare to. Are they obtained from the 3D image to binary image conversion or from the standard photograph?

(2) Claim 1, lines 13-15, recite the limitation “a step to calculate the horizontal position of each region of the fabric specimen and calculate the height value”. There is no antecedent basis from limitation of this claim. Horizontal table is the only thing that has been stated, but nothing about “horizontal position” has been mention. It is unclear what horizontal position is and where that values would be found or how it is calculated. It is also unclear how the calculation and determination of the height value that is stated.

(3) Claim 1, lines 16-17, recite the limitation “a step to correlate the pixel shift value at the measured height with the actual height value.” It is unclear the calculation of the pixel shift value as well as the height and the actual height

value. Examiner understand that the height is determined from the laser and the CCD after image analysis, but no equation or threshold are stated to determine how the height is to be determine and to be compare.

Claim Rejection – 35 USC 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2 and 6 are rejected under 35 U.S.C. 102(b) as being unpatentable over R. B. Ramgulam (J. Text. Inst. 1993, 84 No. 2 "The Objective Assessments of Fabric Pilling – Part 1: Methology" by R. B Ramgulam, J. Amirbayat and I. Porat, see IDS).

R. B. Ramgulam disclose the following:

(1) Regarding claim 1:

A fabric pillings evaluation method and procedure using stereovision comprising:

a step to lay the fabric specimen on the horizontally traveling table and translate the table in the right angle of the projector laser beam, scanning the surface profile of the specimen using a couple of CCD cameras and a slit laser beam projector (page 221 paragraph 2. Historical, page 222 paragraph 4.1 Laser Sensor, Fig. 1, page 223 paragraph 4.2 The X-Y Table);

a step to reconstruct the 3D image of the fabric surface (page 223 paragraph 5. Acquisition and Processing of Data, Fig. 2);

a step to convert the 3D image into a binary image by height-threshold algorithm and number, area and density values of the pillings acquired from the standard photographs (page 223 paragraph 5. Acquisition and Processing of Data and Fig. 2. Values like area and density are inheriting values are gathered from a CCD camera.).

a step to calculate the horizontal position of each region of the fabric specimen and calculate the height value (horizontal position is inherently know since the X-Y table that can move in small increments, which is control by the computer, know fully the horizontal position of the table where the specimen that is being examine. The height value is a inherit values that if found when the laser build a profile scan of the fabric in examination.); and

a step to correlate the pixel shift value at the measured height with the actual height value (Pixel shift is seen as differencing of a pixel(s) that is of different color or contrast from the background. Height is seen as what is determined by the user, as a threshold height that is desire, when the profile is being build of the fabric specimen. Actual height is what the laser scan as the profile of the fabric. Correlation between the pixel shift value and the measurement of the height is a inherit values from creating the profile from the laser scanning.).

(2) Regarding claim 2:

wherein the measurement includes calibrating the initial position of the apparatus before the measurement (Recalibration is a inherit action for any kind of measurement device. Since the fabrics that are being examine will be different every time it is logical to recalibrate the apparatus such that the base value will be the same in order for the contrast/difference to be measure and compare).

7. Claim 6 is rejected under 35 U.S.C. 102(b) as being unpatentable over B. Xu (J. Text. Inst. 1997, 88 Part 1, No.4 "Instrumental Evaluation of Fabric Pilling", see IDS)

(1) Regarding claims 6:

A fabric pilling evaluation apparatus using stereovision composed of:

a horizontally traveling table where the fabric specimen is laid, fixed and translated (Page 489 paragraph "2. Image-Analysis System" lines 7-11.);

a slit laser beam projector which measures the height values of the fabric specimen translated by the horizontally traveling table, with the projector being fixed in the right angle of the table (figure 1, Page 489, lines 5-9.);

a couple of CCD cameras to scan the surface profile of the fabric specimen, with the cameras being fixed a little slanted to the projector (Page 488 paragraph "1. Introduction" lines 20-27, page 489 lines 1-9, page 489 lines 1-5);

a controller computer to receive data for the slit laser beam projector and a couple of CCD cameras stated above and calculates the degree of pilings (Page 488 paragraph "1. Introduction" lines 20-27, page 489 lines 1-9).

Although Xu doesn't specifically disclose "the cameras being fixed a little slanted to the projector", such limitation is merely a matter of design choice and

would have been obvious in the system disclose by Xu. Xu teaches that the CCD is capable of capturing and analyzing multi-frame images of the samples of various locations to generate reliable statistical data. The limitation in claim 6 does not define a patentably distinct invention over that of Xu since both invention as a whole and Xu are directed toward gathering data to determine the profile of the sample that is being analysis. Therefore, to have slightly slanted CCD in XU would have been a matter of obvious design choice to one of the ordinary skill in the art.

Claim Rejection – 35 USC 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over R. B. Ramgulam (J. Text. Inst. 1993, 84 No. 2 "The Objective Assessments of Fabric Pilling – Part 1: Methology" by R. B Ramgulam, J. Amirbayat and I. Porat) in view of Hector C. Abril (Optical Engineering, Vol.37 No. 1k1, November 1998 "Automatic method based on image analysis for pilling evaluation in Fabrics" by Hector C. Abril, Yezld Torres, Rafael Navarro.)

R. B. Ramgulam disclose all the limitation stated above except for the following:

(1) Regarding claim 4:

Claim 4: wherein the linear regression gives regression coefficient higher than 0.95 and lower than 1.0.

Hector C. Abril in the same field of endeavor disclose that the linear regression gives regression coefficient higher than 0.95 and lower than 1.0 (page 2943 right column lines 1-33, figures 7-9).

It would have been obvious to one skill in the art at the time of the invention to employ the teachings of Hector C. Abril to R. B. Ramgulam of having regression coefficient higher than 0.95 and lower than 1.0. This limitation is follow because it conform to the standards that is comparable what is has done is the past, which is human visualization comparison.

(2) Regarding claim 5:

Claim 5: the linear regression coefficient is 0.99. (Page 2943 right column lines 1-33, figures 7-9)

Hector C. Abril in the same field of endeavor discloses that the linear regression coefficient is 0.99. (page 2943 right column lines 1-33, figure 7-9).

It would have been obvious to one skill in the art at the time of the invention to employ the teachings of Hector C. Abril to R. B. Ramgulam of having linear regression coefficient is 0.99. This limitation is follow because it conform to the standards that is comparable what is has done is the past, which is human visualization comparison.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Alkempêr el at (US 2002/0081015 A1) disclose about 3D material analysis.

Vachtsevanos et al (US Patent Number 5,936,665) disclose about automated apparatus for counting pillings in textile fabrics.

Tae Jin Kang ("Automatic Evaluation of Fabric Pilling Using a 3-D Non-contact Scanning System" Soo Chang Kim; Tae Jin Kang; Instrumentation and Measurement Technology Conference, 2005. IMTC 2005. Proceedings of the IEEE Volume 1, 16-19 May 2005 Page(s):628 - 632) disclose automatic evaluation of fabric pilling using a 3-D Non-contact Scanning System.

Fazekas, Z ("Automatic visual assessment of fabric quality" Fazekas, Z.; Komuves, J.; Renyi, I.; Surjan, L.; Industrial Electronics, 1999. ISIE '99. Proceedings of the IEEE International Symposium on. Volume 1, 12-16 July 1999 Page(s): 178 - 182 vol.1 Digital Object Identifier 10.1109/ISIE.1999.801780) disclose automatic visual assessment of fabric quality.

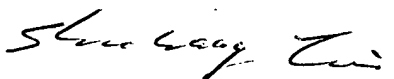
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsung-Yin Tsai whose telephone number is (571) 270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tsung-Yin Tsai
February 2, 2007


SHUWANG LIU
SUPERVISORY PATENT EXAMINER